
TIG INVERTER



INSTRUCTION MANUAL

Contents

| | |
|----------------------------------|----|
| Warning | 3 |
| General Description | 4 |
| Block Diagram | 4 |
| Main Parameters | 5 |
| Circuit Diagram | 6 |
| Installation and Operation | 6 |
| Caution | 8 |
| Maintenance | 9 |
| Spare Parts List | 10 |
| Troubleshooting | 11 |

EC DECLARATION OF CONFORMITY

We hereby declare that the following machines:

TIG180P Dual Voltage / TIG200P AC/DC

correspond to the following edicts and standards:

EMC Directives: 73/23/EEC and 89/336/EEC

European Standard: EN/IEC60974

Warning

Welding and cutting is dangerous to the operator, people in or near the working area, and the surrounding environment. Therefore, the performance of welding and cutting must only be done under the strict and comprehensive observance of all relevant safety regulations. Please read and understand this instruction manual carefully before installation and operation.

- Switching function modes during welding could potentially damage the equipment.
- Disconnect the electrode-holder cable from the equipment before welding.
- A safety switch is necessary to prevent the equipment from electric-leakage.
- Use only high quality welding tools and equipment with this Inverter.
- Operators should be suitably trained to use this equipment.

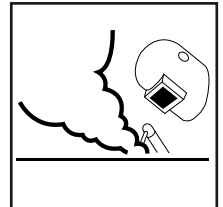
Electric Shock

- Connect the earth cable according to standard regulation.
- Avoid any contact with live components of the welding circuit, electrodes and wires with bare hands. The operator should wear suitable welding gloves while using this machine.
- The operator should keep the work piece insulated from himself/herself.



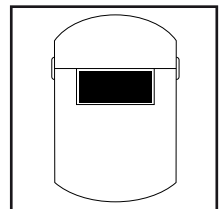
Smoke and Gas generated while welding or cutting

- Avoid breathing in smoke and gas from welding or cutting.
- Make sure you are working in a well ventilated area.



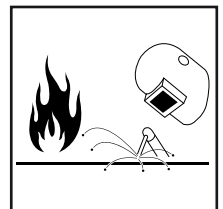
Arc light-emission

- Always wear a welding helmet and appropriate work clothes while welding.
- Measures should also be taken to protect people in or near the area you are working.



Fire hazard

- Sparks from welding may cause fire. Remove any flammable items from the immediate area before welding.
- Have a fire extinguisher nearby.



Noise

- Surface noise is generated while welding and cutting. Use suitable hearing protection.

Machine Fault

- Consult this instruction manual in the case of a fault.
- Contact your local dealer or supplier for further advice.

General Description

This welding machine is manufactured with advanced inverter technology. With power component MOSFET and PWM technology, the inverter converts DC voltage, which is rectified from input AC voltage, to high 100KHz frequency AC voltage; as a consequence, the voltage is transformed and rectified. Therefore, it results in a smaller transformer and lighter inverter machine, which increases welding performance by 30%. The high frequency oscillation, which enables the output of high frequency DC, is employed in the arc-starting system. The features of this product are as follows: stable current, reliable, fully portable, efficient and quiet in operation.

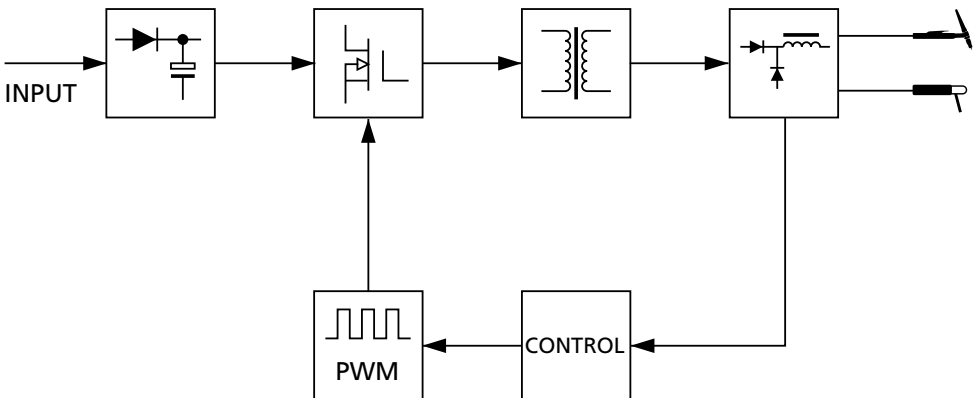
When MMA welding, this welding machine features stable output and the option of arc force. In case of normal arc input voltage, the stability of welding current output is not compromised with variation of arc length, therefore it results in a stable performance of welding operation. In the case of low input voltage, welding output current increases while arc voltage decreases, as a consequence, the length of arc, which is not sufficient, will automatically compensate and the modulation of arc force is accessible. In case of the input arc voltage being too low to maintain arc, the output of this welding equipment descends steeply, which avoids the splash generated due to over current input.

When TIG welding, this welding equipment features stable output current and that the welding current output does not change with the variation of the length of arc. In case of short circuit of electrode, the voltage automatically decreases to 0V, which limits the impairment of electrode and pollution to environment.

Warranty of maintenance for main components is one years. During the warranty maintenance period, all maintenance is free of charge, not including any deliberate damage or alteration to this welding equipment.

In the case of a fault with the inverter machine, only qualified electricians are authorized to carry out repairs.

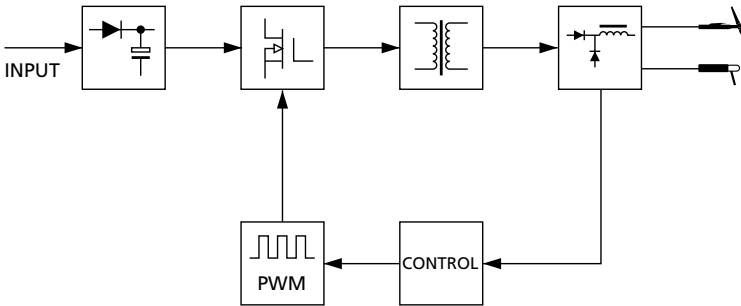
Block Diagram



Main Parameters

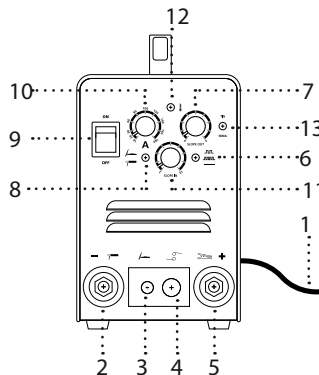
| | TIG180P | TIG200P |
|---------------------------|--|--|
| Fuse Rating | 16 amp | 20 amp |
| Generator Friendly | + / - 15% | + / - 15% |
| Input Power Voltage | 110 / 220 volt (single phase) | AC 230 volt (single Phase) |
| Rate Input Power Capacity | 3.9 KVA | 4.5 KVA |
| Input Voltage Frequency | 50 / 60 Hz | ----- |
| Output Current Range | MMA 10 – 180 amps TIG 5 – 180 amps | AC TIG 17 – 200 amps DC TIG 10 – 200 amps |
| Duty Cycle (25°C) | 110 volt 140 amps @ 60% 240 volt 180 amps @ 60% | AC TIG 200 amps @ 60% DC TIG 185 amps @ 60% |
| ARC – Starting | HF | HF |
| Weight | 8.8 kg | 25 kg |
| Overall Dimensions | 371 x 155 x 295 mm | 493 x 330 x 320 mm |
| Protection Class | Ip23 | Ip23 |
| Pulse Frequency | MH 50 – 200 Hz LH 0.5 – 2 Hz | MH 0.5 – 300 Hz LH 0.5 – 2 Hz |
| Welding Thickness | DC 0.3 – 6 mm | AC 0.5 – 8 mm |
| Slope In | 2 – 10 seconds variable | 0 – 1 seconds variable |
| Slope Out | 0 – 5 seconds variable | 0 – 10 seconds variable |
| Clean Width | ----- | 20 – 80% |

Circuit Diagram (single phase input)



Installation and Operation

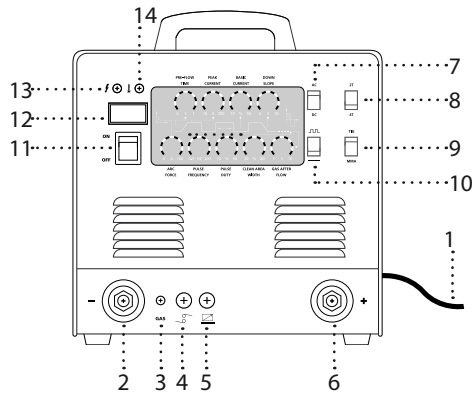
Please note: Any extension of mains cables or torch cables may affect the performance of this welding equipment. Input voltage is decided by the length of the cable, therefore longer than standard cables will reduce the amount of resistance. It is recommended to maintain the standard length of main cables and torch cables.



TIG180P

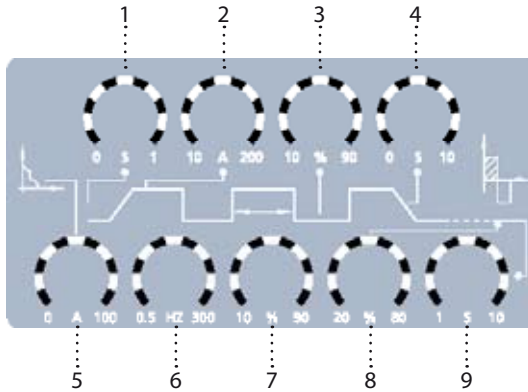
- 1 : Mains Lead
- 2 : Arc / Torch Lead Connection (35/50 Dinze)
- 3 : Torch Gas Connection
- 4 : HF Torch Connection Socket
- 5 : Earth Socket Connection
- 6 : Pulse Frequency Switch

- 7 : Slope Out Timer Control
- 8 : MMA / TIG Mode Switch
- 9 : Mains On/Off Switch
- 10 : Current Output Control
- 11 : Slope In Control Timer
- 12 : O.C. Warning Light
- 13 : 2 Pole / 4 Pole Switch (Continuous weld / Non continuous weld)



TIG 200P AC/DC

- 1 : Mains Lead
- 2 : Arc / Torch Lead Connection (35/50 Dinze)
- 3 : Torch Gas Connection
- 4 : HF Torch Connection
- 5 : Footswitch Connection
- 6 : Earth Socket Connection
- 7 : AC / DC Switch
- 8 : 2 Pole / 4 Pole Switch (Continuous weld / Non continuous weld)
- 9 : MMA / TIG Mode Switch
- 10 : Pulse Frequency Switch
- 11 : Mains On/Off Switch
- 12 : Digital Indicator Display (Welding Current)
- 13 : Supply Failure Warning Light
- 14 : O.C. Warning Light



- 1 : Gas Pre Flow Timer
- 2 : Output Current Control (Main)
- 3 : Base Current Setting
- 4 : Slope Out Timer
- 5 : Arc Force Adjustment
- 6 : Pulse Frequency Control
- 7 : Pulse Duty Control
- 8 : Clean Area / Width Adjustment
- 9 : Post Flow Adjustment

Caution

1. Working Environment

- 1.1 The location in which this welding equipment is installed should be free from dust, corrosive chemical gas, flammable gas or materials, and a maximum of 80% humidity.
- 1.2 Avoid the operation of welding in the open air unless the working area sheltered is from the elements. The ambient temperature of the working environment should be maintained within -10°C to $+40^{\circ}\text{C}$.
- 1.3 Allow a distance of at least 300mm (12") between this machine and any walls.
- 1.4 Make sure the area you are working in is well ventilated.

2. Safety Tips

- 2.1 Ventilation: Good ventilation is of critical importance for the performance and service life of this inverter welding machine. Maintain a minimum distance of 30cm (12") between the inverter machine and any other objects in or near the working area.
- 2.2 Do not operate this machine when the O.C. Light is lit.
A sudden halt may occur while the welding operation is carried out while this welding machine is in over-load status. Under this circumstance, it is unnecessary to restart this welding equipment. Keep the built-in fan working to bring down the temperature inside this welding equipment.
- 2.3 This welding equipment uses automatic voltage compensation, which enables the maintaining of the voltage range within the given range. In case the voltage of input power

supply current exceeds the stipulated value, it is possibly damaging to the components of this welding equipment.

2.4 An earth terminal is available for this welding equipment. Connect with the earth cable to avoid static and electric shock.

2.5 DO NOT contact the output terminal when the welding operation is performed. An electric shock will occur.

Maintenance

Exposure to extremely dusty, damp, or corrosive air is damaging to this machine. In order to prevent any possible failure or fault of the inverter, clean any dust at regular intervals with compressed air.

Please note: Proper maintenance should be carried out by a skilled and qualified electrician on a regular basis. Any attempts by an unauthorised or unskilled individual to remove the outer casing, or conduct repairs or modifications to the machine will void the warranty.

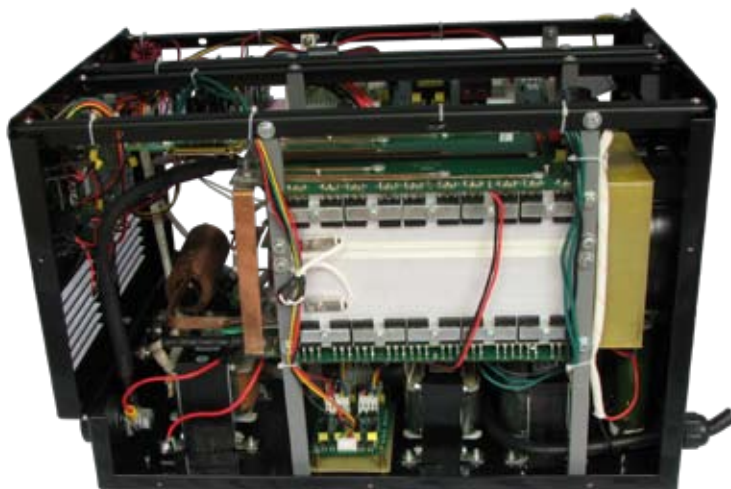
Spare Parts List

| Description | | Part Number | |
|-------------|-------------------------|-------------|---------|
| | | TIG180P | TIG200P |
| A | Front Panel | | |
| B | Cover | | |
| C | Carrying Strap / Handle | | |
| D | Dial | | |
| E | Dinze Socket | | |
| F | On / Off Switch | | |
| G | Power Cable | | |
| H | Internal Fan | | |
| I | Bottom PCB | | |
| J | Heat Sink | | |
| K | Center PCB | | |
| L | Rubber Feet | | |
| M | Top PCB | | |

TIG180p



TIG200p



Troubleshooting

Please note: In the event of a fault with this inverter welding machine, only qualified electricians are authorised to undertake repairs.

| Fault Symptoms | Reason |
|--|--|
| No output from machine, O.C. Light not lit, internal fan not working | <ol style="list-style-type: none"> 1. Possible failure of voltage input. Consult an authorised technician. 2. Possible failure of power supply. Check plug and power cable for damage. |
| No output from machine, O.C. Light not lit, internal fan not working, machine suddenly halts operation | <ol style="list-style-type: none"> 1. Possible failure of power supply. Check plug and power cable for damage. 2. The machine is in temporary shut down mode due to over heating. Wait a few minutes for machine to cool down and it will automatically re-start. 3. Power supply input is faulty. Check plug and power cable for damage. 4. The machine is in temporary shut down mode due to constantly being switched on and off. Unplug the machine and wait 5 minutes before re-starting. 5. 24 volt relay board may be defective. Consult an authorised technician for a replacement. 6. The top PCB is not receiving power. Consult an authorised technician. |
| No output from machine, O.C. Light not lit, internal fan is working | <ol style="list-style-type: none"> 1. Possible loose connection in machine. Consult an authorised technician. 2. Possible failure of Control Module / Drive Circuit / Drive Module. Consult an authorised technician for a replacement if necessary. 3. Possible failure of MOSFET / Transformers / Rectifier Diode / Internal connections. Consult an authorised technician for a replacement if necessary. |
| No output from machine, O.C. Light is lit | <ol style="list-style-type: none"> 1. The machine is in temporary shut down mode due to over heating. Wait a few minutes for machine to cool down and it will automatically re-start. 2. The machine is in temporary shut down mode due to excess current. 3. Possible function failure of inverter machine. Unplug the machine and perform the following checks: <ol style="list-style-type: none"> a) If the fault indicator is on MOSFET the top PCB is possibly faulty. b) If the fault indicator is off there could be damage to center PCB / possible damage to secondary rectifier of transformer. c) Possible damage to feedback circuit. Consult an authorised technician. |